Syndromic Surveillance in New York State

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Objectives

- Familiarize participants with the goals and specific components of the NYS Syndromic Surveillance System.

- Describe unique aspects of the system.

- Discuss current limitations and future enhancements.

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Definitions

- **Traditional notifiable disease surveillance**
  - Relies on patient seeking medical care, laboratory test being ordered and laboratory/clinician reporting
  - Reporting lag is typically days to weeks

- **"Syndromic" surveillance**
  - Tracking non-specific symptoms or health "events" (sale of diarrhea medication)
  - "Real time" (within hours)

Early Syndromic Surveillance, 1665

The Diseases and Casualties this Week.

		Infants	13
		Kingsevil	2
		Leprosie	1
		Meagrome	1
		Mother	1
		Plague	2817
		Plurisie	1
		Purples	2
		Quinsie	3
Abortive	5	Rickets	14
Aged	36	Rising of the Lights	32
Apoplexie	1	Rupture	3
Childbed	25	Scowring	3
Chrisomes	22	Scurvy	3
Consumption	130	Spotted Feaver	174
Convulsion	58	Stilborn	11
Cough	2	Stone	3
Distracted	1	Stopping of the stomach	10
Dropsie	32	Suddenly	2
Drownd in a Ditch at Saviours Southwark	1	Surfeit	85
Feaver	314	Teeth	90
Flox and Small-pox	11	Thrush	4
Flux	1	Tissick	3
Grief	3	Ulcer	3
Griping in the Guts	70	Vomiting	1
Jaundies	2	Wormes	18
Imposthume	16		

Christned	Males	90		Buried	Males	2022	
	Females	88			Females	2008	Plague 2817
	In all	178			In all	4030	

Increased in the Burials this Week — 1016
Parishes clear of the Plague — 44. Parishes Infected — 86

The Assize of Bread set forth by Order of the Lord Maior and Court of Aldermen,
A penny Whearen Loaf to contain Nine Ounces and a half, and three
half-penny White Loaves the like weight.

LONDON'S Dreadful Visitation:
Or, A Collection of All the
Bills of Mortality
For this Present Year:
Beginning the 20th of December 1664, and
ending the 19th of December following:
As also, The GENERAL or whole years BILL:
According to the Report made to the
KING's Most Excellent Majesty, (9)
By the Company of Parish-Clerks of London, &c.

Printed and are to be sold by E. Cotes living in Aldersgate-street,
Printer to the said Company 1665.
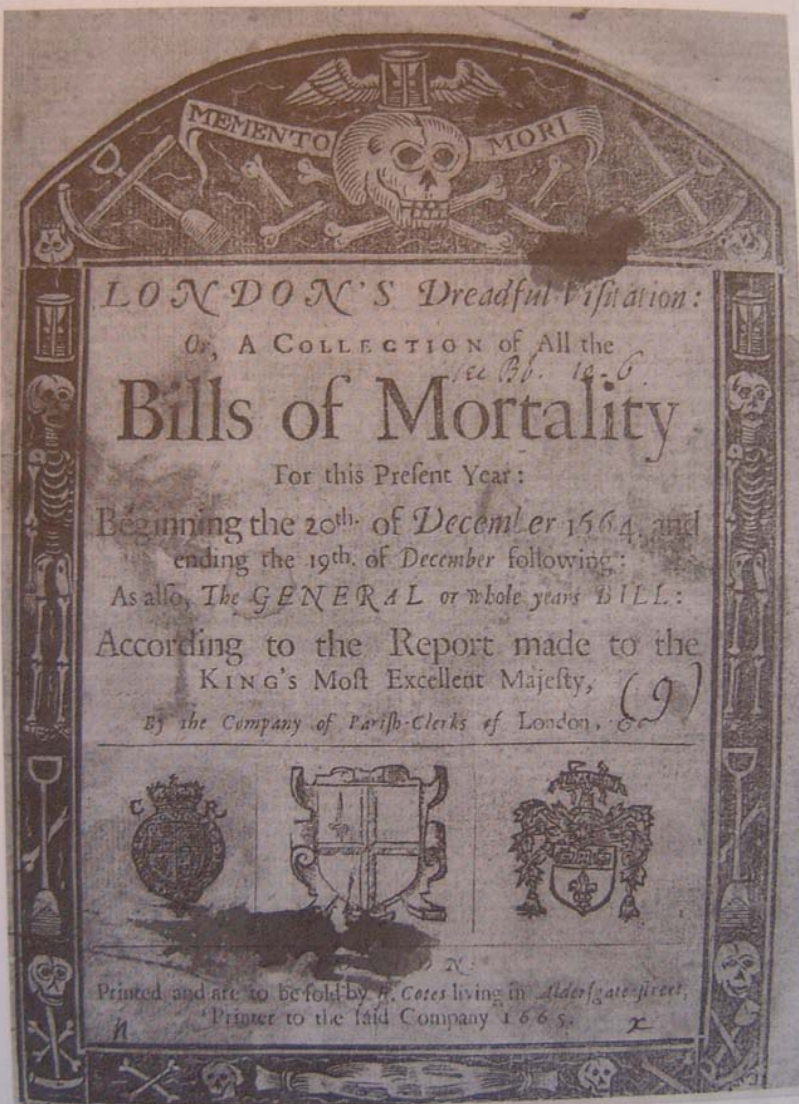
MEMENTO MORI

Plate 1.2. London Bills of Mortality, 1665. (Above) Cover bill for the year of the London plague epidemic of 1665 when 68,596 deaths were attributed to this disease. (Right and overleaf) Bill for the week ending 8 August 1665, showing deaths by parish and cause with 2,817 deaths from plague. Source: Cambridge University Library, rare books collection.

Syndromic Surveillance Goals

- Recognize an outbreak due to a natural cause or a terrorist agent earlier than physician, laboratory or citizen reporting.

- Monitor general community health – track level of disease.

- Provide objective evidence that an outbreak is not occurring.

- Help sustain a strong ongoing relationship between public health and clinical medicine.

Background

- Syndromic surveillance <u>can</u> detect outbreaks.
- Syndromic surveillance is a <u>supplement</u> to traditional disease reporting.
- Statistically significant signals must be verified <u>clinically</u> to determine public health significance.
- Inter-system comparisons may help in the interpretation of a positive signal.
- Although a promising approach, there is insufficient experience to evaluate if syndromic surveillance improves public health response.

Syndromic Surveillance Systems Operated by NYSDOH (Emergency Department Data)

System Name	Data Source/ Participants (No./Type)	Collection Method/ Start Date/ Frequency	Data Content	Analysis	Current Output/ Frequency
ED Phone Calls	Hospital ED & LHD staff 52 counties 157 hospitals	Phone calls w/ HIN data entry Nov 2001 Daily Voluntary except during times of heightened concern	Unusual events or clusters of illnesses	Counts of unusual cases/ clusters with descriptive narrative	Internal NYSDOH report Mon-Fri only, Sat-Sun compiled on Mon, Daily during times of heightened concern
ED Syndromic Surveillance System	Hospital ED 20 hospitals 9 counties Westchester County w/ 12 hospitals is on cusp	Electronic batch files via ECLRS* Dec 2003 Daily	ED chief complaints categorized into 6 syndromes Resp, GI, Fever, Asthma, Rash, Neuro	Counts by syndrome/ hospital, CuSum analysis	Counts and pt. lists by syndrome/hospital, statistical analysis & trends - on Commerce for participating counties & hospitals– Daily

* Electronic Clinical Laboratory Reporting System

Syndromic Surveillance Systems Operated by NYSDOH (Pharmacy Data)

System Name	Data Source/ Participants (No./Type)	Collection Method/ Start Date/ Frequency	Data Content	Analysis	Current Output/ Frequency
NRDM/RODS (National Retail Data Monitor/ Real-time Outbreak and Disease Surveillance)	OTC drug sales from 12 major retailers, 20,000 stores Nationwide as of 8/04	Electronic Batch file July 2003 Daily	6,500-8,000 OTC drug sales in NY 15 Categories	Counts by category, CuSum analysis	Internal NYSDOH report Mon-Fri Signals shared with LHD/RO as necessary
Medicaid Over the Counter (OTC) and Prescription Medications	Office of Medicaid Management (OMM) Data Warehouse: 22,000-26,000 medications	Electronic Batch file March 2003 Daily	Medicaid scripts filled in NYS 18 Categories	Counts by category, CuSum analysis	County and Regional counts by drug category on Commerce Daily Short and long term graphs for signals in past 3 days only

Additional Syndromic Surveillance Systems Operated by LHDs (examples)

- NYCDOHMH ED syndromic system, 9-1-1, absenteeism, OTC medications
- Westchester County ED & outpatient depts.
- Suffolk County 9-1-1
- HVRHON 9-1-1 (Orange & Dutchess Co.), school absenteeism
- Erie County EMT transport monitoring
- Monroe County ED Census, ILI, 9-1-1
- Albany County ED Census

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National Syndromic Surveillance System: BioSense

- Data Sources
  - Department of Defense Military Treatment Facilities
  - Veteran's Administration facilities
  - National clinical testing labs and nurse hotline data (under development)
  - Data elements include health syndromes, diagnosis codes, facility name, patient zip code

- Part of the multi-department Federal BioSurveillance initiative
  - BioSense = health surveillance data
  - BioWatch = air monitoring
  - BioShield = treatments (vaccines, new drugs, etc.)

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NYSDOH Operating Principles - 1

- LHD participation is <u>essential</u>
  - Hospital inclusion limited to counties where LHD is an active participant.
  - LHD has the lead in investigating syndromic signals from hospitals or medication sales within their county.
  - As appropriate, LHDs will provide additional data/reports regarding syndromic signals from their county to other LHDs or hospitals.

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NYSDOH Operating Principles - 2

- Hospitals submit data in standard format to NYS.

- Existing LHD systems will be encouraged to submit data to NYS consistent with NYS standard format.

- Daily reports sent back to LHDs and hospitals via Commerce.

  - Includes reports at county and region levels.

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Address   https://commerce.health.state.ny.us/doh3/applinks/edsurv/SyndromicSurvHome   Go

Syndromic Surveillance Home Page

ED Daily Reports

Daily Syndrome Counts

GO

Medicaid Prescription Daily Reports

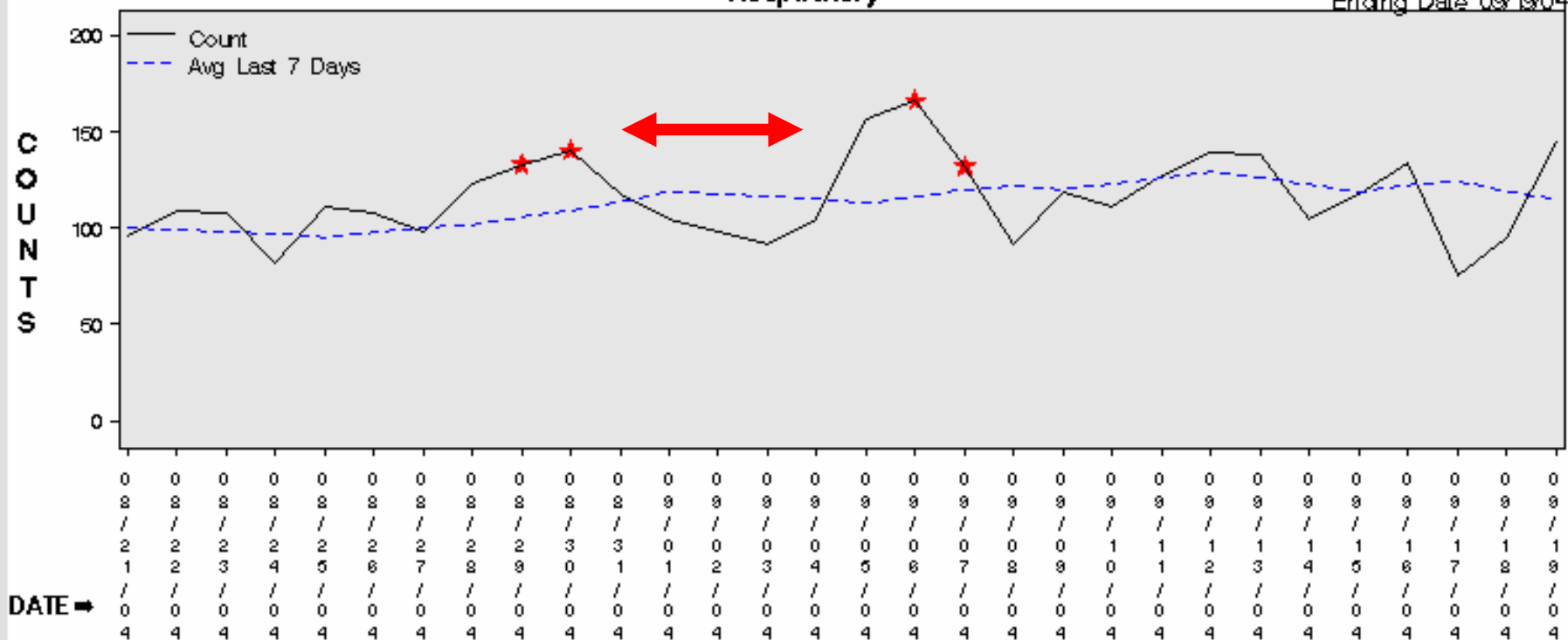| County Rpts | ALBANY | GO |
| Region Rpts | BUFFALO | GO |

Today is Wednesday, February 09

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Done   Local intranet

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30 Day Activity Report

Hudson Valley Region All Reporting Hospitals

Respiratory

Ending Date 09/19/04

Legend:
— Count
-- Avg Last 7 Days

COUNTS axis: 200, 150, 100, 50, 0

DATE →																													
COUNT	96	109	108	82	111	108	98	123	133	140	118	104	98	92	104	157	166	132	91	119	111	127	139	138	105	117	134	75	95	145
FLAGS		N	N	N	N		N		C3	C23				N	N	N	C3	C3											N	N

C1= Mild Sensitivity   C2= Moderate Sensitivity   C3= Ultra Sensitivity   N= Data Missing, Result May Not Valid

County Summary Report

NAME OF COUNTY

RxGroup	COUNT									
	11/19/04	11/20/04	11/21/04	11/22/04	11/23/04	11/24/04	11/25/04	11/26/04	11/27/04	11/28/04
1st and 2nd Generation Cephalosporins	14	6	4	6	12	6	0	6	3	1
3rd and 4th Generation Cephalosporins	2	1	0	1	2	2	0	1	0	0
Analgesics - Narcotic	67	37	26	75	63	86	9	47	26	14
Analgesics - NonNarcotic	26	8	10	41	22	22	3	18	12	13
Antacids	1	0	1	8 *C1C2C3*	0	2 *C2C3*	3	2	1	1
Antiasthmatic	68	25	25	80	84	73	7	61	34	27
Antidiarrheals	6	0	1	2	1	1	1	1	1	1
Antihistamines	33	11	18	37	34	34	3	30	15	16
Cough / Cold / Allergy	13	1	7	12	11	13	2	3	6	4
Fluoroquinolones	10	4	3	10	16	14	0	6	3	3
Herpes Agents	1	0	1	3	0	3	0	2	0	1
Influenza Agents	0	0	0	11 *C1C2C3*	1 *C2C3*	0	0	0	0	0
Macrolide Antibiotics	20	10	8	17	9	18	2	10	3	10
Penicillin G and Ampicillins	23	9	0	35	20	29	1	10	10	5
Penicillinase-Resistant	8	2	2	10	7	10 *C3*	2	3	1	1
Systemic and Topical Nasal Products	13	4	7	15	14	18	0	12	8	7
Tetracyclines	3	2	2	4 *C1*	2	3	0	5 *C2C3*	1	0
Electrolyte Mixtures	2	1	1	2	1	7	1	3	1	0

C1 --> Mild Sensitivity   C2 --> Moderate Sensitivity   C3 --> Ultra Sensitivity

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Address   https://commerce.health.state.ny.us/doh3/applinks/edsurv/DisplayStat?FileChoice=c000113a.gif&ReportClass=M

Medicaid Prescription Surveillance System

County = County Name

Influenza Agents
30 Day Activity

Ending Date 01/26/05

COUNTS

— Count
– – Avg Last 7 Days
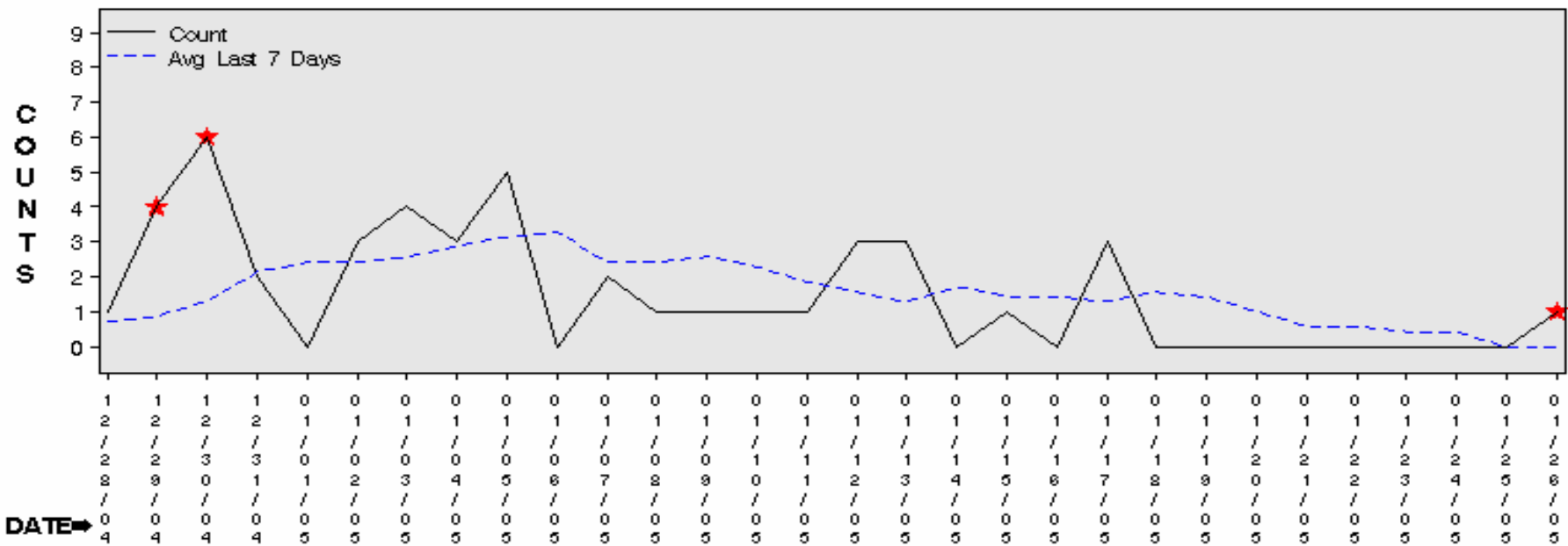
| COUNT | 1 | 4 | 6 | 2 | 0 | 3 | 4 | 3 | 5 | 0 | 2 | 1 | 1 | 1 | 1 | 3 | 3 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| FLAGS | | C123 | C123 | | | | | | | | | | | | | | | | | | | | | | | | | | | C1 |

C1= Mild Sensitivity   C2= Moderate Sensitivity   C3= Ultra Sensitivity

Medicaid Prescription Surveillance System

County = County Name

Influenza Agents
Long Term Trend

Starting Date 03/01/03   Ending Date 01/26/05

DATE

Division of Epidemiology, NYSDOH

OTC Sales Surveillance System

Northeast NY Region

OTC Sales Reports

by DATE (Flagged Data Only)	by GROUP (All Data)	30 Day Graphs (All Data)	Trend Graphs (All Data)
by County - Flagged Groups Only	Antidiarrheal	30 Day Graph Index - by County	Trend Graph Index - by County
by County - Promotional Status for Flagged Groups (past 3 days)	Cough - Pediatric	30 Day Graph Index - by Group	Trend Graph Index - by Group
by County - All Groups	Cough_Cold		
Regional - All Groups	Hydrocortisones		
	Nasal Product Internal		
	Thermometers		
	Throat Lozenges		
	Antifever - Adult		
	Antifever - Pediatric		
	Baby_Child Electrolyte		
	Bronchial Remedies		
	Chest Rubs		
	Cold relief - Adult		
	Cold relief - Pediatric		
	Cough - Adult		

Practical Uses of Data: Examples

- Pertussis

- RNC surveillance

- Influenza

- Public reassurance

NYSDOH Next Steps

- Invite additional LHDs and hospitals to participate in syndromic surveillance data submission
  - Active recruitment at local level by ss coordinator

- Promote user access to Syndromic Surveillance Commerce website
  - Develop step-by-step user's guide for system
  - Enhance communication

- Ensure user access to all data sets via Commerce website.
  - Investigate opportunities to interface multiple systems

- Develop recommendations for response protocol
  - Features to consider when determining significance of a signal
  - Possible actions when investigating a signal

NYSDOH Next Steps

- Explore disease models associated with various medications

- Consider availability of data analyses by zip code, gender, age groups

- Conduct validation studies with filters

- Compare NYSDOH filters to other systems

- Fund expanded/enhanced syndromic surveillance activities

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